IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

RANDY E. RAGER et al.,	:	
Plaintiffs	:	**Civil Action No. 1:08-cv-1482**
	:	**(Chief Judge Kane)**
v.	:	
	:	
GENERAL ELECTRIC COMPANY,	:	
Defendant	:	

MEMORANDUM

Before the Court are Defendant General Electric Company's ("GE") motions in limine to exclude the expert testimony of Dr. Wayne K. Ross, M.D., Ronald Parsons, and Scott Jones under Federal Rule of Evidence 702 and Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993). (Doc. Nos. 32, 34, 36.) The Court heard oral argument on the motions on November 4, 2010. For the reasons that follow, the Court will deny GE's motions.

I. BACKGROUND

Plaintiffs[1] Randy E. Rager, Tammy Rager, and State Farm Fire and Casualty Co., as subrogee of Randy and Tammy Rager, have instituted this action against GE for a fire that occurred on July 30, 2006, and resulted in the death of two children. (Doc. No. 1 ¶¶ 15, 21.) Plaintiffs have asserted causes of action sounding in negligence; strict liability; wrongful death; the Survival Act, 42 Pa. C.S.A. § 8302; and negligent infliction of emotional distress. Plaintiffs allege that the electric clothes dryer manufactured by GE had a design defect and caused a fire in the Ragers' home. (Id. ¶ 21.)

II. STANDARD OF REVIEW

[1] Plaintiffs Randy E. Rager and Tammy Rager bring suit individually and as co-administrators of the estates of Damen Rager and Camren Rager, deceased.

A trial court has a special obligation to ensure that expert testimony is relevant and reliable. Kumho Tire Co. v. Carmichael, 526 U.S. 137, 147 (1999). Accordingly, the admission of scientific, technical, or other specialized knowledge is within the trial court's discretion. See General Elec. Co. v. Joiner, 522 U.S. 136, 146-47 (1997). A court's inquiry is controlled by Rule 702 of the Federal Rules of Evidence, which provides:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702. As the Third Circuit has explained, these requirements represent a "trilogy of restrictions on expert testimony: qualification, reliability and fit." Schneider v. Fried, 320 F.3d 396, 404 (3d Cir. 2003).

When considering the reliability requirement, the Supreme Court has held that the gatekeeping function requires the trial court to "make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." Kumho Tire, 526 U.S at 152. To meet this requirement, "a litigant has to make more than a prima facie showing that his expert's methodology is reliable . . . [but] the evidentiary requirement of reliability is lower than the merits standard of correctness." Pineda v. Ford Motor Co., 520 F.3d 237, 244 (3d Cir. 2008). When evaluating the reliability of a witness's methodology, a court is guided by several familiar factors drawn from Daubert:

> (1) whether a method consists of a testable hypothesis; (2) whether the method has been subject to peer review; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique's operation; (5) whether the method is generally accepted; (6) the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology; and (8) the non-judicial uses to which the method has been put.

Calhoun v. Yamaha Motor Corp., 350 F.3d 316, 321 (3d Cir. 2003) (citing In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 742 n.8 (3d Cir. 1994)). These factors "may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, and the subject of his testimony." Kumho Tire, 526 U.S. at 150. Accordingly, the Rule 702 inquiry is a flexible one, and the court should also take into account any other relevant factors. Calhoun, 350 F.3d at 321. "[T]rial courts should focus 'solely on principles and methodology, not on the conclusions they generate.'" Montgomery Cnty. v. Microvote Corp., 320 F.3d 440, 448 (3d Cir. 2003) (quoting Daubert, 509 U.S. at 595).

The final requirement is fit, which means "the expert's testimony must be relevant for the purposes of the case and must assist the trier of fact." Id. (quoting Schneider, 320 F.3d at 405). "Rule 702's helpfulness standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility." Daubert, 509 U.S. at 591-92. This inquiry goes primarily to relevance because expert opinion which does not relate to a disputed issue is not relevant and cannot assist the trier of fact as required by Rule 702. Id. As the Supreme Court has explained,

> The study of the phases of the moon, for example, may provide valid scientific "knowledge" about whether a certain night was dark, and if darkness is a fact in issue, the knowledge will assist the trier of fact. However (absent creditable grounds supporting such a link), evidence that the moon was full on a certain night will not assist the trier of fact in determining whether an individual was unusually likely to

have behaved irrationally on that night.

Id. Like the typical relevance inquiry, the standard for analyzing the fit of an expert's analysis to the case at hand is "not that high." United States v. Ford, 481 F.3d 215, 219-20 (3d Cir. 2007) (quoting Paoli, 35 F.3d at 745). But, expert testimony can be powerful and misleading because of the difficulty in evaluating it, and the Third Circuit has cautioned that district courts should tread carefully when evaluating proffered expert testimony, paying special attention to the relevance prong of Daubert. Ford, 481 F.3d at 219 n.6.

III. DISCUSSION

A. Dr. Wayne K. Ross, M.D.

1. Report

Dr. Wayne K. Ross's report concludes that the cause of death for both Camren Rager, age 6, and Damen Rager, age 2, was smoke inhalation and thermal burns. (Doc. No. 32-1, Ex. A at 3.) Dr. Ross's expert report also concludes that both Camren and Damen "suffered severe conscious pain and suffering for a number of minutes before they expired." (Id.) In his report, Dr. Ross notes that Camren and Damen's carboxyhemoglobin ("CO") levels indicate that they were conscious and that they inhaled superheated fumes and smoke, which would have awakened them. (Id. at 3, 4.) The report further states that the soot found in the boys' nasal passages indicate that they were alive and breathing during the fire. (Id. at 4.) Dr. Ross's report also notes that the boys were found in the bedroom, with Camren on the floor by the open bedroom door, and Damen on the top bed of the bunk bed. (Id. at 2.) At his deposition and at the hearing, Dr. Ross testified that his methodology consisted of reviewing "baseline information" including medical records, autopsy reports, witness statements, and photographs of the scene and of

Camren and Damen. (Doc. No. 41-2, Ex. A at 25-27; Hr'g. Tr. at 13:7-25; 14:1-2.) Dr. Ross then applied his education and experience in investigating scenes and fire-related deaths, as well as relevant medical literature, to this baseline information in order to form his opinion. (Doc. No. 41-2, Ex. A at 25-27; Hr'g. Tr. at 13:16-19.)

2. Challenge

GE contends that Dr. Ross's opinion as to the cause of death of Camren and Damen and the existence and duration of conscious pain and suffering is unreliable under Daubert and Rule 702.[2] (Doc. No. 33 at 16-20.) GE also asserts that Dr. Ross should be precluded from offering an opinion as to the location of the boys when found by rescuers because his opinion does not fit the facts of the case and the issue of the boys' locations is not the proper subject of expert testimony. (Doc. No. 33 at 20-21.) Plaintiffs dispute these contentions, arguing that GE's challenges to Dr. Ross's opinion as to cause of death and pain and suffering are attacks on the substance of his opinions, not his methodology, and thus are properly raised through cross-examination. (Doc. No. 41 at 8, 10-11.) As to Dr. Ross's opinion on the location of the boys, Plaintiffs' brief states that his "understanding . . . is not being offered as an expert opinion on the matter." (Id. at 12.) However, at the hearing, Plaintiffs' counsel appeared to argue that Dr. Ross was offering an expert opinion on the location and that he was qualified to do so. (Hr'g. Tr. at 24:23-25; 25:1.) In addition to its Daubert challenges, GE contends that Dr. Ross's opinions

[2] GE does not challenge Dr. Ross's qualifications in this matter, for good reason. Dr. Ross is currently the forensic pathologist for Dauphin County and Lancaster County. (Hr'g. Tr. at 8:21-22.) He has performed over 8,500 autopsies, over a hundred of which were performed on children and adults who perished as a result of fire. (Id. at 9:12; 10:18-22) He is also a professor of forensic pathology at the Pennsylvania State University's Hershey Medical Center. (Id. at 11:2-4.)

regarding cause of death and pain and suffering are unduly prejudicial. (Doc. No. 33 at 19; Doc. No. 53 at 6.) The Court will address GE's challenges in turn.

a. Unreliability

GE argues that Dr. Ross should be precluded from testifying that burns were a contributing cause of death of both Camren and Damen because his opinion is unreliable. (Doc. No. 33 at 16.) In support of its argument, GE contends that Dr. Ross's opinion is not supported by any evidence in the record and thus is "purely speculation," and his reliance on "anecdotal reports" of' agonal respirations "does not provide a reasonable or reliable support for his opinion." (Id. at 16, 17; Doc. No. 53 at 7.) GE similarly asserts that Dr. Ross's opinion that Camren and Damen suffered "conscious pain and suffering for a number of minutes" is unreliable because it is not supported by any methodology or the factual record. (Doc. No. 33 at 17.)

GE's arguments are largely targeted at Dr. Ross's conclusions, not his methodology. Indeed, GE states that "[t]he problem with Dr. Ross's proposed opinion on pain and suffering is not that he failed to follow a methodology, but rather, that neither his professed methodology nor the factual record actually supports the conclusion he has drawn." (Doc. No. 53 at 3.) When considering expert testimony, "[t]he test of admissibility is not whether a particular scientific opinion has the best foundation or whether it is demonstrably correct. Rather, the test is whether the 'particular opinion is based on valid reason and reliable methodology. The analysis of the conclusions themselves is for the trier of fact when the expert is subjected to cross-examination.'" Oddi v. Ford Motor Co., 234 F.3d 136, 145-46 (3d Cir. 2000) (quoting Kannankeril v. Terminix Int'l Inc., 128 F.3d 802, 806 (3d Cir. 1997)). Despite this, a district

court still must consider an expert's conclusions to assess whether they could reliably flow "from the facts known to the expert and the methodology used." Id. at 146 (quoting Heller v. Shaw Indus., Inc., 167 F.3d 146, 153 (3d Cir. 1999)). "A court may conclude that there is simply too great a gap between the data and the opinion proffered." Id. However, even where the court believes that "there are better grounds for some alternative conclusion, and that there are some flaws in the scientist's methods, if there are 'good grounds' for the expert's conclusion, it should be admitted." Heller, 167 F.3d at 152-53 (citing Paoli, 35 F.3d at 744).

In this case, the Court finds that there is not such a great gap between the data and the conclusions reached to render Dr. Ross's opinion unreliable. At the hearing, Dr. Ross testified that "the medical records are replete with support" for his opinion that Camren died as a result of smoke inhalation and thermal burns. (Hr'g. Tr. at 14:12-13.) Dr. Ross stated that witnesses at the scene noted evidence of agonal respirations and second- and third-degree burns on Camren's body. (Id. at 14:13-19.) Dr. Ross pointed to coroner photographs of Camren and noted thermal burns on the outside of his body. (Pls.' Ex. 4; id. at 14:20-25; 17:7-10; 18:15-20.) The photographs also showed soot around Camren's nose, which Dr. Ross opined was evidence that Camren had inhaled superheated fumes that would cause thermal burns inside his throat and to his lungs. (Pls.' Ex. 4; Hr'g. Tr. at 14:22-24; 18:17-12.) Dr. Ross testified that, in his experience, when soot and smoke have been inhaled there is evidence of burns inside the neck and down to the lungs, and "what killed them in this case, is those burns." (Hr'g. Tr. at 15:17-25.) Dr. Ross then pointed to thermal burns evident in photographs of Damen. (Pls.' Ex. 5; id. at 23:8-12, 25; 24:1-3; 26:2-10.) Dr. Ross also noted evidence of soot in Damen's nostril airways. (Pls.' Ex. 5; Hr'g. Tr. at 23:15.) Though GE clearly disagrees with Dr. Ross's use of

the statements of rescue personnel regarding evidence of agonal respirations and the conclusions drawn from these statements, the Court finds that Dr. Ross has at least good grounds for concluding that thermal burns were a contributing cause of death for both Camren and Damen.

The Court will similarly reject GE's challenge to the reliability of Dr. Ross's conclusion that Camren and Damen suffered conscious pain and suffering for a number of minutes. GE's first argument regarding this opinion is that the evidence does not support a reliable medical conclusion that the boys suffered conscious pain and suffering. (Doc. No. 33 at 17-19.) At the hearing, Dr. Ross testified to the many bases for his opinion. First, Dr. Ross explained that when smoke is inhaled it causes bronchospasm or laryngospasm, which causes a person to have difficulty breathing and would "awaken them immediately out of their sleep." (Hr'g. Tr. at 29:7-16.) Next, Dr. Ross noted that the levels of CO found in the boys' blood – 23 percent for Damen and 44 percent for Camren – indicate that the boys were conscious at the time of the fire and had been inhaling smoke for minutes. (Id. at 27:13-18.) In addition to the smoke inhalation and CO levels, Dr. Ross pointed to the soot on Camren's feet, hands, and knees as evidence that he was up and moving around during the fire. (Id. at 27:9-25.) In regards to Damen, Dr. Ross pointed to photographic evidence of vomitus on a pillow in the top bunk which indicates that he was awake and vomiting during the fire. (Pls.' Ex. 6; id. at 36:24-25; 37:1-3.) The Court finds that there is not too great a gap between the data relied on and Dr. Ross's conclusion that Camren and Damen experienced conscious pain and suffering.

GE's second challenge to Dr. Ross's pain and suffering opinion relates to duration. GE contends that his opinion – that the boys experienced conscious pain and suffering for a number of minutes – "is so imprecise that it cannot be helpful to the jurors." (Doc. No. 53 at 5.) Dr.

Ross admitted that, due to unknown factors regarding the circumstances surrounding the fire, he could not give a specific range of minutes of pain and suffering to a reasonable degree of medical certainty. (Hr'g. Tr. at 53:2-14.) However, based on his methodology and experience, Dr. Ross is able to state with a reasonable degree of medical certainty that the boys experienced conscious pain and suffering for a "number of minutes." (Id. at 29:17-24; 53:2-14.) Dr. Ross noted that "it takes minutes" to get to the CO levels found in the boys' system. (Id. at 53:12-14.) Had they not been inhaling smoke for minutes, the CO levels would have been much higher. (Id. at 27:10-12.) Further, Dr. Ross testified that it takes minutes for the smoke inhalation to cause damage to the lungs to the point where it is not possible to breathe adequately. (Id. at 30:5-10.) He also referred to studies which showed that once children's air supply is completely cut off, "they still have a minute and a half of consciousness." (Id. at 53:15-20.) The Third Circuit has noted that "with regards to reliability, helpfulness turns on whether the expert's 'technique or principle [is] sufficiently reliable so that it will aid the jury in reaching accurate results.'" In re Paoli, 35 F.3d at 744 (citing DeLuca by DeLuca v. Merrell Dow Pharm., Inc., 911 F.2d 941, 956 (3d Cir. 1990)). The Court is satisfied that Dr. Ross's methodology is sufficiently reliable for his opinion to be helpful to the jury. Accordingly, GE's challenges to Dr. Ross's testimony on these grounds will be denied.

b. Location of the Boys When Found by Rescue Workers

GE argues that Dr. Ross's opinion as to the location of the boys when found by rescue workers does not fit the facts of the case and would be unhelpful to the jury. (Doc. No. 33 at 20.) GE also contends that the issue of location is a "simple factual matter" that is not a proper subject of expert testimony. (Id. at 20-21.) The Court disagrees. At the hearing, Dr. Ross

testified to the evidence in the record that led to his conclusion that Camren was located by the boys' bedroom door, and Damen was located on the top bunk in the bedroom. This evidence included the location of the burns on the boys' bodies, the soot found on Camren's knees, feet, and palms, and the presence of vomit on the pillow on the top bunk. (Hr'g. Tr. at 36:18-25; 37:1-7.) Dr. Ross also relied on the statements of the boys' father and brother, who both stated that Camren was the first boy brought out of the house by rescue workers. (Id. at 40:5-9.) The Court notes that there are inconsistencies between the reports of rescue personnel and the statements of the family. Nevertheless, the Court finds that Dr. Ross has good grounds for his opinion that Camren was located on the floor and Damen was located in the upper bunk. Further, the Court believes that Dr. Ross's opinion is reliable in light of his stated methodology and his experience in crime scene reconstruction. (Id. at 46:18-23.) Under these circumstances, cross-examination is sufficient for GE to challenge the weight of Dr. Ross's conclusions. See United States v. Mitchell, 365 F.3d 215, 244 (3d Cir. 2004) (If an expert's testimony rests on "good grounds . . . it should be tested by the adversary process – competing expert testimony and active cross-examination – rather than excluded from jurors' scrutiny for fear that they will not grasp its complexities or satisfactorily weigh its inadequacies.")

The Court will also reject GE's challenge that Dr. Ross's opinion on the location of the boys does not satisfy Daubert's "fit" requirement. GE claims that Dr. Ross's opinion "merely disagrees with fact testimony by the witnesses who were present" and thus "can only serve to confuse the jurors and will not aid them in understanding any aspect of this case." (Doc. No. 33 at 21.) The Court disagrees. Dr. Ross's opinion as to the boys' locations appears to have a valid scientific connection to a pertinent inquiry in this matter, as the locations relate to and inform his

opinion as to pain and suffering and cause of death. Accordingly, the Court finds that Dr. Ross's proposed testimony as to the boys' locations satisfies the "fit" requirement of Daubert.

Based on the record and the discussion above, the Court is satisfied that Plaintiffs have met their burden to show that Dr. Ross followed reliable methodology and that he has at least good grounds for his conclusions.

c. Unfair Prejudice

In its briefing, GE argues that Dr. Ross's opinions on thermal burns as a cause of death and the duration of pain and suffering are misleading and unfairly prejudicial. (Doc. No. 33 at 16, 19; Doc. No. 53 at 6.) Accordingly, it appears that GE is objecting to Dr. Ross's testimony on Rule 403 grounds. See Fed. R. Evid. 403. Because GE's motion is made pursuant to Rule 702 and Daubert, and the focus of the party's briefing and oral argument was on these issues, the Court will reserve ruling on any Rule 403 objections at this time.

B. Ronald Parsons

1. Report

Plaintiffs' second expert, Ronald Parsons, investigated the cause and origin of the fire that occurred at the Ragers' home on July 30, 2006. (Doc. No. 42-2, Ex. K at 1.) Parsons testified that his cause and origin investigation was guided by NFPA 921, Guide for Fire and Explosion Investigations, published by the National Fire Protection Association. (Hr'g. Tr. at 63:14-16.) In determining the origin of the fire, Parsons reviewed various sources, including fire patterns, witness information, fire dynamics, and arc mapping. (Doc. No. 42-2, Ex. K at 14-15.) Parsons examined photographs of the fire scene for its structural fire patterns. (Id. at 15.) Parsons also reviewed the subject dryer and photographs of the dryer the night of the fire for

dryer fire patterns. (Id. at 19-21.) The report further includes the deposition testimony of various witnesses. (Id. at 22-29.) Parsons's origin analysis concluded with a discussion of fire dynamics and arc mapping. (Id. at 29-31.) Based on this information, Parsons concluded that the fire originated within the dryer. (Id. at 31.)

Having concluded that the fire originated within the dryer, Parsons proceeded to determine the cause of the fire. After examining the Ragers' dryer, Parsons determined that the fire was caused by lint that ignited at the electric heating element. (Id. at 32.) This burning lint continued to ignite "secondary fuels in the dryer, including the clothing load, the plastic components of the dryer, and the lint accumulated in the air path downstream of the drum." (Id.) According to Parsons's lint ignition theory, this process occurs because of a design defect in GE dryers. (Id. at 6-7.) Specifically, the dryer's design promotes the build-up of lint in close proximity to the heating element. (Id. at 6.) As a result of the dryer's design, lint can come into contact with the heating coils and ignite. (Id.) The ignited lint is then drawn into the deflector where it catches the lint collected in the deflector on fire. (Id. at 6.) The flames are drawn into the dryer drum as a result of the dryer fan, igniting the load. (Id.) Once the load ignites, flames and heat can escape the dryer and ignite other combustible materials in the area of the dryer. (Id.) Parsons's expert report also discusses alternative designs for the GE dryer which eliminate the potential for a fire caused by accumulation of lint in proximity to the heat source. (Id. at 83-91.)

2. Challenge

GE challenges the reliability and fit of Parsons's opinion. GE first argues that Parsons's opinion is unreliable because his lint ignition theory is not recognized by any peer-reviewed literature and is not generally accepted by the engineering or appliance design community. (Doc.

No. 35 at 9.) Next, GE asserts that Parsons's opinion is unreliable because he "uniformly rigged his tests by making substantial alterations to the dryers" and it does not hold up to his own testing or testing done by others. (Id. at 10, 11.) Finally, GE argues that the facts concerning the Ragers' dryer contradict Parsons's lint ignition theory and that Parsons's test results do not fit the case. (Id. at 21-23.) The Court will address each of GE's arguments in turn.

a. Challenged Lack of Publication and General Acceptance

GE first argues that Parsons's opinion is unreliable because his lint ignition theory is not generally accepted in the field of engineering or in the appliance design community. (Doc. No. 35 at 9.) As Plaintiffs correctly note, peer review and general acceptance are not prerequisites for admissibility.[3] In Schneider, the Third Circuit held that "[w]here there are other factors that demonstrate the reliability of the expert's methodology, an expert opinion should not be excluded simply because there is no literature on point." 320 F.3d at 406. The Court finds that, on balance, the Daubert factors favor admission of Parsons's expert testimony.

In regards to the first Daubert factor, Parsons's theory consists of a testable hypothesis: lint that accumulates behind the dryer drum can come into contact with the heater coil and ignite

[3] Plaintiffs cite a 2003 report by the Consumer Product Safety Commission ("CPSC") entitled "Final Report on Electric Clothes Dryers and Lint Ignition Characteristics" as evidence of general acceptance of Parsons's lint ignition theory. (Doc. No. 42 at 16-17.) This report concluded that "lint begins to accumulate inside a dryer chassis upon first use" and "lint that accumulates on the heater housing can easily ignite under conditions of a failed high-limit thermostat and a blocked exhaust vent." (Doc. No. 42-2, Ex. O at iii-iv.) The report also notes that "the results of the CPSC staff tests showed that lint that accumulates inside the dryer can ignite if the lint contacts certain areas of the heater housing, if the lint is in proximity to the heater, or if the lint is ingested by the heater box." (Id. at iii.) GE argues that the report does not indicate general acceptance of Parsons's theory because the testing was performed in a square box configuration, not in a dryer. (Doc. No. 52 at 5.) The Court finds that even if the CPSC report does not reflect general acceptance of Parsons's lint ignition theory, the other Daubert factors demonstrate the reliability of Parsons's methodology. See Schneider, 320 F.3d at 406.

a fire that ultimately spreads to the dryer load. Parsons has tested this hypothesis on numerous occasions, both before and after the present case came to his attention. (Hr'g. Tr. at 100:20-25.) Indeed, Parsons testified that he has conducted over one thousand hours of testing. (Id. at 101:1-4.) Parsons also conducted testing specifically for the present case. (Id. at 101:7-10.)

Further, although Parsons's particular lint ignition theory has not been subject to peer review, it is based on a methodology that is sufficiently reliable for purposes of admissibility. In his report, Parsons states that his investigation into the cause and origin of the Rager fire was guided by NFPA 921. (Doc. No. 42-2, Ex. K at 3, 5.) NPFA 921 states that in determining the cause of the fire, the investigator must identify the appliance involved in the ignition, the presence of a competent ignition source, the type and form of the material first ignited, and the circumstances and factors that come together to allow the fire to occur. (Id. at 32.) Here, Parsons's report identifies the dryer as the appliance involved in the ignition and finds that the fire originated at the electric heating element and rear heater housing assembly. (Doc. 42-2, Ex. K at 32.) Parsons goes on to identify lint and other combustible material that collected in the area as the material first ignited and identifies the circumstances and factors that allowed the fire to occur, namely, "the burning lint ignited secondary fuels in the dryer, including the load of towels, the plastic components of the dryer, and the lint accumulated in the air path downstream of the drum." (Id.) NFPA 921 also states that fire cause determination can only "be accomplished through the credible elimination of all other potential ignition sources, provided that the remaining ignition source is consistent with all known facts. (Id.) In his report, Parsons considered and eliminated all other possible sources of ignition. (Id. at 33-34.) Additionally, Parsons testified that he was able to eliminate all other potential causes of the fire, including

misuse of the dryer, improper installation, improper cleaning, and improper materials. (Hr'g. Tr. at 234:21-25; 235:1-10.) As this Court has previously noted, several courts have found NFPA 921 to be a reliable methodology for purposes of Rule 702. See Hoang v. Funai Corp., 652 F. Supp. 2d 564, 567 (M.D. Pa. 2009). Accordingly, in reaching his conclusion that the cause of the fire was lint ignition, Parsons "employed a methodology that was subject to peer review, had a known or potential rate of error, could be measured against existing standards, and is generally accepted." Id. at 570. Further, Parsons performed his testing pursuant to the scientific method as reflected in NFPA 921. (Hr'g. Tr. at 63:14-15; Doc. No. 42-2, Ex. K at 3-5.) Thus, the Court finds that there is a sufficient relationship between Parsons's technique in testing his theory and NFPA 921. See Calhoun, 350 F.3d at 321 (listing "the relationship of the technique to methods which have been established to be reliable" as a factor to be considered in determining whether testimony is reliable).

In consideration of the seventh Daubert factor, the Court finds that Parsons's qualifications weigh in favor of admissibility. Parsons has been a fire cause and origin analyst for over thirty years and has conducted at least 3,000 fire investigations. (Hr'g. Tr. at 60:2-4.) He is certified by the National Association of Fire Investigators ("NAFI") as a Fire and Explosion Investigator and a Fire and Explosion Investigator Instructor. (Doc. No. 42-2, Ex. K at 109.) At the hearing, Parsons testified that in the last ten years he has dedicated approximately twenty hours per week to investigating fires, identifying and examining exemplar dryers, and testing dryers. (Hr'g. Tr. at 61:10-14.) Parsons also noted that he has conducted over one thousand hours of testing dryers to see whether lint will ignite and what happens when lint does ignite. (Id. at 100:22-25; 101:1-4.) The Court is satisfied that Parsons's extensive experience

supports a finding that his opinion is the result of a reliable methodology.

In sum, the Court finds that an analysis of the Daubert factors demonstrates the reliability of Parsons's methodology, and his opinion should not be excluded simply because there is no literature directly on point. Accordingly, GE's challenge to Parsons's testimony on this ground will be denied.

b. Alleged Manipulation of Testing

Parsons conducted three tests specifically for the present case. Test 1 was performed on March 19, 2010. (Hr'g. Tr. at 169:25; 170:1-3.) The dryer used in Test 1 was from "exactly the same class and date as the Ragers' dryer." (Id. at 124:15-17.) Parsons removed the deflector from an exemplar GE dryer and bolted it to the dryer used in the test. (Id. at 123:23-25; 124:1-4.) The deflector contained 70.5 grams of lint that had accumulated during the life of the exemplar dryer. (Id. at 126:1-5, 12-13.) Thus, the lint on the deflector was in its original form and undisturbed by Parsons. (Id. at 123:22-24.) After starting the dryer, Parsons dropped balls of lint one by one through a hole in the rear of the dryer. (Id. at 123:5-7.) Each ball of lint weighed less than one tenth of a gram. (Id.) The lint ignited when it came into contact with the dryer's heating element and proceeded to ignite the lint in the deflector. (Id. at 125:6-8.) The dryer's air flow pulled the fire into the drum and ignited the tumbling load of towels. (Id. at 125:16-18.) Parsons allowed the load to burn for one hour, but the dryer door did not open. (Id. at 176:17-19.)

Parsons performed Test 2 on March 20, 2010. This time, Parsons performed the test outdoors and placed the test dryer in a mock-up of the Ragers' laundry closet. (Id. at 177:4-14.) Parsons used the same GE electric dryer that was used in Test 1. (Id. at 177:22-23.) Because the

fire in Test 1 damaged the dryer's front panel, Parsons replaced the front panel with that of a gas dryer. (Id. at 177:23-25.) Parsons applied 70.5 grams of cotton to a deflector from an exemplar dryer and bolted it to the back of his test dryer. (Id. at 126:17-20.) After starting the dryer and letting it run for twenty minutes to warm up, Parsons dropped a ball of lint weighing less than one tenth of a gram through a hole in the back of the dryer. (Id. at 182:8-12.) The lint ignited when it came into contact with the heating element and caused a fire that ultimately ignited the tumbling load of clothes in the drum. (Id. at 182:16-25.) The fire did not cause the dryer door to open. (Id. at 182:24-25.)

That same day, Parsons performed Test 3. He used the dryer from Test 2 in a mock-up of the Ragers' laundry closet. (Id. at 138:17-19.) Parsons put unburned clothing in the dryer drum and allowed the dryer to run for twenty minutes. (Id.) After allowing the dryer to warm up, Parsons ignited the clothes with a torch and closed the door. (Id. at 138:20-22.) After approximately five minutes, the dryer door opened and the fire spread to the mock-up of the laundry closet. (Id. at 138:22-24; 187:2-5.)

GE contends that Parsons's opinion is unreliable because "he has uniformly rigged his tests by making substantial alterations to the test dryers." (Doc. No. 35 at 11.) GE specifically takes issue with the fact that in his testing Parsons used the front of a gas dryer, deposited lint into the back of the dryer, placed 70.5 grams of cotton onto the dryer's deflector, and applied a blowtorch to a load of clothes. (Id.) It is true that Test 2 utilized an electric dryer that had been modified to include the front panel of a gas dryer. (Hr'g. Tr. at 131:20-23.) However, Parsons explained that the first test, which used an electric dryer, resulted in a fire that damaged the plastic inside the dryer's front panel. (Id. at 177:22-24.) Because the electric dryer's front panel

was damaged, Parsons replaced it with the front panel of a gas dryer. (Id. at 177:24-25.) Parsons testified that this modification did not result in a material difference to the dryer or the test results. (Id. at 132:2-11.) He also noted that he prevented any air infiltration by sealing the dryer with steel strips. (Id.) The Court is satisfied that this modification did not result in conditions that were so different from the Rager fire so as to render the testing unreliable. See Habecker v. Clark Equip. Co., 36 F.3d 278, 290 (3d Cir. 1994) (excluding expert testimony because the expert's accident simulation was so different from the conditions of the accident that it was unreliable).

The Court will similarly reject GE's challenge to Parsons's practice of dropping balls of lint into the back of the dryer. At the hearing, Parsons explained that it is not cost effective to run a dryer for years, waiting for the event of lint dropping onto the heating coil to occur. (Hr'g. Tr. at 165:6-8.) Instead, Parsons dropped balls of lint into the heating element or heat source "for the simple reason, one cannot predict when a stray piece of lint may come off the back of the drum and hit that element and then the fire process begins." (Id. at 164:10-14.) Parsons artificially introduced lint into the dryer by dropping a ball of lint, measuring less than one tenth of a gram, into a brass tube in the back of the dryer. (Id. at 124:5-8.) The lint then dropped onto the heating element and Parsons observed what happened. (Id. at 124:10-11.) GE agrees that "lint particles may, from time to time, come into contact with the heating element" but argues that its tests show that "lint particles that contact the heating element merely ignite briefly and vaporize." (Doc. No. 52 at 3.) Plaintiffs note that Parsons's testing "demonstrates what happens inside the dryer after the lint ignites on the heater coil." (Doc. No. 42 at 26.) The Court cannot say that this aspect of Parsons's testing, which simply facilitates the lint's contact with the

heating element, renders his methodology unreliable.

GE next argues that Parsons's opinion is unreliable because he simulated the accumulation of lint in the dryer's deflector by adding 71.5 grams of lint to the deflector in Test 2.[4] (Doc. No. 35 at 14.) GE contends that "[t]his is dramatically more material than could ever be expected to accumulate on a dryer's deflector through regular use, with proper venting and care of the dryer." (Id.) Plaintiffs counter that Parsons "has measured and weighed the lint that he has found in exemplar dryers and has determined that it is not at all unusual to find 71.5 grams of lint in the deflector." (Doc. No. 42 at 26.) Indeed, the deflector used in Test 1 contained over 70 grams of lint that had accumulated throughout the life of the exemplar dryer. (Id. at 126:1-5, 12-13.) At the hearing, Plaintiffs' counsel presented a photograph, which Parsons testified showed four deflectors from GE exemplar dryers "from the appropriate vintage of the Rager dryer." (Pls.' Ex. 37; Hr'g. Tr. at 117:12.) Parsons noted that each of the deflectors contained anywhere from 70 to 90 grams of lint. (Hr'g. Tr. at 117:12-16.) Parsons conceded that he did not have documentation as to the exemplar dryers' care, history, service, and venting. (Id. at 211:18-22.) Nevertheless, the Court finds that Parsons has good grounds for testing a dryer with 70.5 grams of lint in the deflector. See Paoli, 35 F.3d at 744 ("The grounds for the expert's opinions merely have to be good, they do not have to be perfect.") Moreover, "[a] judge frequently should find an expert's methodology helpful even when the judge thinks that the expert's technique has flaws sufficient to render the conclusions inaccurate." Id. at 744-45. Accordingly, the Court finds that this objection to Parsons's testing is properly raised on cross-

[4] The Court notes that the parties' briefs place the amount of lint on the deflector at 71.5 grams, but at the hearing Parsons testified that the deflector contained 70.5 grams of lint. This discrepancy is de minimis.

examination. See e.g., Stecyk v. Bell Helicopter Textron, Inc., 295 F.3d 408, 415 (3d Cir. 2002) ("A party confronted with an adverse expert witness who has sufficient, though perhaps not overwhelming, facts and assumptions as the basis for his opinion can highlight those weaknesses through effective cross-examination.")

GE also takes issue with the fact that Parsons used a blowtorch to ignite a load of towels in Test 3. GE contends that this test does not support Parsons's lint ignition theory because lint was not used to ignite anything. (Doc. No. 35 at 16.) Plaintiffs counter that Test 3 "was designed to determine whether a turning load of burning towels will self-extinguish, or whether they will continue to burn, resulting in a fire that will escape the dryer, igniting adjacent structures." (Doc. No. 42 at 28.) Parsons testified that Test 3 was a continuation of Test 2, in which lint dropped into the heating element ignited, spread to the drum, and caught the tumbling load of clothes on fire. (Hr'g.Tr. at 169:12-14.) Because Test 2 demonstrated that lint could ignite a load of clothes, Parsons then performed Test 3 in order to observe how such a drum fire would progress. (Id. at 168:9-14.) Parsons further testified that the purpose of Test 3 was to observe "the initial fire patterns at the trap duct blower and to see if the fire would attack the bifold doors." (Id. at 190:3-6.) The Court agrees with Plaintiffs that the use of a propane torch to ignite the fire in Test 3 does not invalidate Parsons's theory or make his methodology unreliable. Accordingly, GE's challenge to Parsons's opinion on this issue is rejected.

c. Alleged Lack of Support in Testing

GE argues that Tests 1 and 2 do not support Parsons's theory and thus his opinion is unreliable. (Doc. No. 35 at 12.) The Court disagrees. Parsons admitted that Test 1 did not result in the dryer door opening. (Hr'g. Tr. at 176:17-19.) However, it did demonstrate that lint

introduced into the heating element could ignite and continue to ignite a turning load in the dryer's drum. (Id. at 174:21-22.) Similarly, Test 2 did not cause the dryer door to open, but did show that lint dropped into the heating element can ignite and spread into the drum. (Id. at 182:8-25.) Accordingly, the Court cannot say that these two tests undermine Parsons's conclusions or render his methodology unreliable. See In re TMI Litig., 193 F.3d 613, 675 (3d Cir. 1999). GE also asserts that Test 3 does not support Parsons's opinion. (Doc. No. 35 at 17.) GE contends that "the clothes load in the test was more badly burned than the load in the Rager fire," "the fire damage to the front of the washer and dryer was different from that of the Rager fire," and while portions of the Ragers' laundry closet doors survived the fire, "the exemplar doors used in Parsons's test were completely burned." (Id.) However, Parsons testified that the load, dryer, compartment, and doors were much more burned than those in the Rager fire because "[he] allowed the test to go longer than what [he] felt the Rager residence had burned." (Hr'g. Tr. at 189:24-25; 190:1-2.) Parsons explained that at some point in the test, the results would be "substantially similar," but the purpose of the test "was for the initial fire patterns at the trap duct blower and to see if the fire would attack the bifold doors." (Id. at 190:1-6.) While the end results of Test 3 showed more severe damage than the Rager fire, it does not follow that the test does not support Parsons's theory. Indeed, at the hearing, Plaintiffs' counsel introduced a video of Test 3 (Pls.' Ex. 46) and Parsons pointed out the many similarities in the test's burn patterns and fire damage with photographs of the Rager fire's burn patterns and fire damage (Hr'g. Tr. at 134:17-25; 135:1-8.) Accordingly, the Court rejects GE's challenge that Parsons's opinion is unreliable because of a lack of support in his testing.

GE also contends that Parsons's opinion is unreliable because other experts' testing did

not result in a fire due to lint. (Doc. No. 35 at 20.) The Court must reject this argument. The Third Circuit has held that "[e]xperts with diametrically opposed opinions may nonetheless have good grounds for their views, and a District Court may not make winners and losers through its choice of which side's experts to admit, when all experts are qualified." Mitchell, 365 at 245. The Court is satisfied that Parsons's conclusions are the result of a reliable methodology and that he has good grounds for his opinion. The mere existence of contradictory testing completed by other experts does not render Parsons's opinion unreliable.

d. Fit

GE challenges that "[b]ecause Parsons's opinions rest on unsupported assumptions rather than actual facts, they are properly excluded." (Doc. No. 35 at 23.) The Court recognizes that "it is an abuse of discretion to admit expert testimony which is based on assumptions lacking any factual foundation in the record." Stecyk, 295 F.3d at 414. However, the Court finds that Parsons's conclusions are supported by sufficient factual foundation and that he has good grounds for his opinion. GE contends that the Ragers properly installed the dryer, cleaned the lint trap regularly, and cleaned the area behind the dryer the week before the fire. (Doc. No. 35 at 21.) However, as Plaintiffs correctly note, "the Ragers could not see or clean behind the drum, around the heater housing, inside the deflector, or below the drum at the base of the cabinet." (Doc. No. 42 at 29.) This is precisely the area of the dryer where Parsons opines that lint accumulates – an area which is inaccessible to the homeowner. (Hr'g. Tr. at 106:16-18.) Moreover, the dryer at issue was used "basically every day" over an eleven year period, which in Parsons's experience "is a reasonable time frame for the lint to collect and then be discharged onto the heating element." (Hr'g. Tr. at 156:6-10; 157:3-5.) Even more significantly, Parsons's

report notes that an examination of the Ragers' dryer showed that the dryer's heater housing "has a collection of charred lint at the 3 o'clock location." (Doc. No. 42-2, Ex. K at 20.) At the hearing, Plaintiffs' counsel introduced a photograph of this charred lint in the heater housing. (Pls.' Ex. 34.) Parsons testified that the lint was in close proximity to the dryer's heater coils. (Hr'g. Tr. at 111:16-17.) Parsons further testified that, unlike charred lint that remained in the heater housing at the 6 o'clock position, the fire department's suppression efforts would not have pushed lint into the heater housing at the 3 o'clock location. (Id. at 152:22-25; 153:1-12.) In other words, there is evidence in the record that there was lint in the heater housing in close proximity to the heating element. As such, the Court finds that there is not such a great gap between the data and the conclusions reached to render Parsons's opinion unreliable.

GE's final "fit" argument is that the results of Test 3 do not fit the facts of the case. (Doc. No. 35 at 23.) Similar to its earlier argument described in Part III.B.2.c, supra, GE asserts that "the resulting fire damage to the dryer, the load, and the surrounding mock-up of the Rager laundry closet differed markedly from the damage seen in the actual fire." (Id. at 23-24.) GE contends that this reveals a lack of "fit" between Parsons's opinion and the facts of the case. The Court must reject this argument. As discussed supra, Parsons testified that the reason Test 3 produced more substantial fire damage was because he let the fire continue longer than the Rager fire. (Hr'g. Tr. at 189:24-25; 190:1-2.) Parsons explained that the purpose of Test 3 was to study "the initial fire patterns at the trap duct blower and to see if the fire would attack the bifold doors." (Id. at 190:3-6.) Video of Test 3 introduced at the hearing (Pls.' Ex. 46) showed the many similarities between the test's burn patterns and fire damage and that of the Rager fire. (Hr'g. Tr. at 134:17-25; 135:1-8.) The Court cannot say that Test 3's results do not "fit" the facts

of the case. Accordingly, GE's challenge to Parsons's opinion on these grounds must be denied.

Based on the record and the discussion above, the Court is satisfied that Plaintiffs have met their burden to show that Parsons followed reliable methodology and that he has at least good grounds for his conclusions.

C. Scott Jones

1. Report

Scott Jones graduated with a Bachelor of Science in Mechanical and Nuclear Engineering from University of Cailfornia, Berkeley. (Doc. No. 43-2, Ex. E at 1.) Jones is a registered professional mechanical and electrical engineer, and is licensed in eight states, including Pennsylvania. (Id. at 3.) He was previously employed as an engineer by GE Appliances. (Id. at 2.) He is certified by NAFI as a Fire and Explosion Investigator. (Id. at 3.) Jones's expert report states that he was retained "to inspect the subject dryer and determine whether defect(s) in the design and/or manufacture of the dryer were causal to the fire loss." (Doc. No. 43-2, Ex. F at 2.) His report indicates that his conclusions:

> [A]re based upon the inspection of the subject dryer; inspection of two dryers that had been modified by the Wright Group to establish the design basis for improvements to prevent fires caused by lint accumulation along the air flow path inside the dryer; discussion with Mr. Parsons of the events of the loss and preliminary design guidance testing of exemplar dryers; review of lint accumulation photographs in exemplar dryers; review of Mr. Parsons's fire origin and cause report; the author's skills and experience in major appliance design gained while working as Design Manager at GE Appliances and knowledge and experience gained while investigating dryer and other major appliance fires.

(Id.) Jones's report also states that his investigation was conducted in accordance with NFPA 921. (Id. at 11.)

From his examination of the Rager dryer's remains, Jones concluded that evidence of electrical arcs indicated that the fire originated within the dryer. (Id. at 7.) Further, Jones noted the existence of charred remnants of lint and concluded that accumulated lint ignited in the rear of the dryer and spread to the drum. (Id.) In addition to a discussion of the fire cause and origin, Jones's report includes an analysis of the safety of the dryer's design. Jones opines that GE should have applied the accepted standard for product design analysis, known as Failure Modes Effects Analsyis ("FMEA"), to identify and address "the present concern for lint build-up in the heater system." (Id. at 8.) According to Jones, all FMEA elements indicate the possibility of fire "with low detection capability and multiplicity of occurrences," and as such GE should have identified the problem and "given it precedence for further assessment and/or re-design." (Id.) Jones also opines that two design changes to the dryer would eliminate the potential for fire: addition of a heat shield and use of an axial heater. (Id. at 9.) His report also discusses the feasibility of this alternative design. (Id. at 9-11.) Finally, Jones's report analyzes two dryer units that incorporate these design changes. (Id.)

2. Challenge

GE contends that Jones's testimony should be excluded because it adopts Parsons's lint ignition theory, which GE argues is unreliable. (Doc. No. 37 at 4.) In support of its argument, GE reiterates its same challenges to Parsons's opinion; namely, Parsons's theory is not generally accepted and is not supported by his testing. (Id. at 4-6.) GE also again challenges that Parsons's theory does not "fit" the facts of the case because the Rager dryer was properly vented, cleaned, and maintained. (Id. at 6-7.) For the reasons discussed more fully above in Part III.B.2, supra, the Court must reject GE's argument. Parsons's theory is the product of reliable methodology

and is supported by his testing. Moreover, the Court finds that Parsons has good grounds for his conclusions, and there is sufficient evidence in the factual record for Parsons to conclude that lint existed in the Rager dryer in an area inaccessible to the owner. Accordingly, Jones's reliance on Parsons's opinion is acceptable, and GE's challenge to his testimony on these grounds is denied.

GE also asserts that Jones's testimony should be excluded "because the only purpose he serves in this case is to restate Parsons's opinions." (Id. at 7.) GE appears to argue that Jones's opinion is unreliable because it relies on Parsons's opinion and lacks an independent basis. (Id. at 8-9.) The Court must reject GE's challenge on these grounds. The record shows that Jones conducted an independent review of the remains of the Rager dryer in accordance with NFPA 921 guidelines. (Doc. No. 43-2, Ex. F at 2, 4-8, 11.) Though Jones relied to an extent on Parsons's testing and observations, the Court agrees with Plaintiffs that Jones "reached his own admissible conclusions based upon his own independent analysis." (Doc. No. 43 at 19.) GE has failed to show that Jones relied on Parsons's opinion such that his methodology was unreliable. Further, the case cited by GE, Kozar v. Sharp Electronics Corp., No. 04-901, 2005 WL 2456227, at *2-3 (W.D. Pa. 2005), is distinguishable. In that case, the Plaintiffs' cause and origin expert testified that he relied "solely and entirely" on an electrical engineer's cause and origin findings, even though the electrical engineer was not qualified to give such an opinion. Id. Here, Parsons is qualified to give a cause and origin opinion, and the record reflects that Jones has not relied "solely and entirely" on Parsons's findings.

In its reply brief, GE argues that Jones's opinion is unreliable because his alternative design has not been life tested or commercially developed. (Doc. No. 52 at 12-13.) As a preliminary matter, the testing of an alternative design is not dispositive of whether an expert's

opinion is reliable. See Pineda, 520 F.3d at 248 (finding that the district court focused too narrowly on the expert's failure to test the effectiveness of alternative warnings). Moreover, the alternative designs presented by Jones have been incorporated into prototypes and tested. (Doc. No. 43-2, Ex. F at 10; Doc. No. 51-4, Supp. to Ex. 3, at 144.) The feasibility of a proposed alternative design has been recognized as a factor to consider in determining reliability and can be demonstrated through testing. See Fisher v. Clark Aiken Matik, Inc., No. 3:CV-99-1976, 2006 WL 140424, at *4 (M.D. Pa. Jan. 18, 2006) (citing Milanowicz v. Raymond Corp., 148 F. Supp. 2d 525, 536 (D.N.J. 2001)). In this case, testing showed that the alternative design was feasible and "revealed a clothes drying time at par with existing GE Appliances electric product." (Doc. No. 43-2, Ex. F at 10.) One of the proposed design changes, use of an axial heater, is already in use by other dryer manufacturers. (Id.) Evidence of industry practice has been identified as helpful indicia of reliability in products liability cases. See Fisher, 2006 WL 140424, at *4 (citing Milanowicz, 148 F. Supp. 2d at 536). The Court concludes that Jones's experience, prototype testing, and evidence of industry practice support a finding that his opinion on alternative design is reliable.

Based on the record and the discussion above, the Court is satisfied that Plaintiffs have met their burden to show that Jones followed reliable methodology and that he has at least good grounds for his conclusions.

IV. CONCLUSION

For the foregoing reasons, the Court will deny GE's motions in limine to exclude the expert testimony of Dr. Ross, Parsons, and Jones. (Doc. Nos. 32, 34, 36.) An order consistent with this memorandum follows.

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

RANDY E. RAGER et al.,	:	
Plaintiffs	:	**Civil Action No. 1:08-cv-1482:**
	:	**(Chief Judge Kane)**
v.	:	
	:	
GENERAL ELECTRIC COMPANY,	:	
Defendant	:	

ORDER

NOW, this 22nd day of December 2010, upon consideration of Defendant General Electric Company's motions in limine to exclude the expert testimony of Dr. Wayne K. Ross, M.D., Ronald Parsons, and Scott Jones (Doc. Nos. 32, 34, 36), and for the reasons set forth in the accompanying memorandum, **IT IS HEREBY ORDERED** that Defendant's motions (Doc. Nos. 32, 34, 36) are **DENIED**.

s/ Yvette Kane
Yvette Kane, Chief Judge
United States District Court
Middle District of Pennsylvania